



Docket No: 252169US0CONT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: : GROUP ART UNIT: 1755

Patrick A. GANE, et al. :

SERIAL NO: 10/827,531 : EXAMINER:

FILED: April 20, 2004 :

FOR: COMPOSITE CO-STRUCTURED OR
CO-ADSORBED, MINERAL OR
ORGANIC FILLER OR PIGMENT
COMPOUNDS AND THE USE
THEREOF

LETTER TO PTO

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

Application(s) enclose a declaration (37 CFR 1.132) for consideration by the Examiner as
he considers the merits of the above-identified continuation application.

Respectfully submitted,

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Appln. No. 10/827,531
Declaration, 37 CFR 1.132



DOCKET NO: 252169US0PCT

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FOR: COMPOSITE CO-STRUCTURED :
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ORGANIC FILLER OR PIGMENT
COMPOUNDS AND THE USE THEREOF

DECLARATION 37 CFR 1.132

COMMISSIONER FOR PATENTS
P. O. BOX 1450
ALEXANDRIA, VIRGINIA 22313-1450

SIR:

Now comes Matthias Buri who deposes and says that:

- 1) I am one of the inventors of the above-identified application.
- 2) I received the Eidg. Dipl. Laborant qualification from the Swiss Confederation, Berne, Switzerland.
- 3) Since 1976 I have been employed by Pluess-Staufer/Omya where I have been engaged as a researcher in the study of analytics/dispersants.
- 4) I have read the specification of the above-identified application, as well as the content of the Office Action of October 10, 2003 from the U.S. Patent Office and each of the references cited therein.

5) That in order to demonstrate the material distinction between the co-structured or co-adsorbed mineral, organic filler or pigment of the present invention from the pigment mixtures of the cited U. S. Patents 5,605,568 and 5,439,558 which are not co-structured, the following comparative evidence has been obtained.

Experiment 1

I. (Comparative Example) The example of Column 6, lines 46ff of U. S. Patent 5,605,568 was repeated in which 46.7 % by wt of CaCO_3 , 23.3 % by wt of talc, 29.2 % by wt of water, 0.4 % by wt of a grinding aid of a Na-K salt of polyacrylic acid and 0.4 % by wt of a dispersing agent of a K salt of an acrylate/butylacrylate copolymer were mixed. The mixture was co-ground in an agitating ball mill to prepare a CaCO_3 -talc coating pigment slurry.

II. (Invention) A pigment co-structure of 66.7 % by wt of CaCO_3 and 33.3 % by wt of talc is prepared by the procedure as follows:

A 600 g amount of dry Finnish talc (size as described in Example 1, trial 2 of WO 99/52984) was added to a 5 litre volume fluidized bed mixer (type Lödige, Paderborn, Germany, plows rotating, stirrer in action). This addition was followed by the addition 12 g of active Maresin PD 125, which is a polyamide resin that functions as a co-structuring agent, (a 15 % by weight active aqueous solution) (Mare S.p.A., Via S.A.M Zaccaria 1, I-20122 Milano). To this mixture in the mixer was added 1200 g CaCO_3 as a 71.8 % by wt aqueous slurry (size as described in Example 1, trial 2 of WO 99/52984), as well as an additional amount of water to achieve a mixture of 60 % by wt solids content. A commercial sodium polyacrylate dispersant was added to the mixture to reduce its viscosity.

SEM images of samples of the two materials were taken and are shown in the next page. The two images of the comparative example are identified as 41082/16 and the two

images of the co-structured example of the invention are identified as 41082/17. No co-structuring of the sample of the comparative pigment mixture is observed. The SEM images show a clear distinction between the two types of pigment materials with the co-structured pigment of the invention having a superior brightness of 92.7 % in comparison to the brightness of the comparative example mixture at 90.6 %.

Experiment 2

I. (Comparative Example) The procedure of the comparative Example of Experiment 1 was repeated with the only difference being that the quantities of the two pigments were 52.5 % by wt of CaCO_3 and 17.5 % by wt of talc.

II. (Invention) A pigment co-structure of 75.0 % by wt of CaCO_3 and 25.0 % by wt of talc was prepared as described in Experiment 1, II (Invention) above.

SEM images of samples of the two materials were taken and are shown in the next page. The two images of the comparative example are identified as 41082/14 and the two images of the co-structured example of the invention are identified as 41083/06. No co-structuring of the sample of the comparative pigment mixture is observed. The SEM images show a clear distinction between the two types of pigment materials with the pigment co-structure of the invention having a superior brightness of 91.9 % in comparison to the brightness of the comparative mixture example at 91.6 %.

Experiment 3

I. (Comparative Example) Example 1 of Column 5, lines 35-44 of U. S. Patent 5,439,558 was repeated in which a pigment blend of 55.0 % by wt of CaCO_3 and 40.0 % by wt of talc with 5.0% by wt of starch was prepared. The mixture was combined with 5 % by

wt of a commercial rotogravure binder based on an acrylic acid ester (Comp Example 1 of the patent).

II. (Invention) A pigment co-structure of 60.0 % by wt of CaCO_3 and 40.0 % by wt of talc was prepared as described in Experiment 1, II (Invention) above.

SEM images of samples of the two materials were taken and are shown in the next page. The two images of the comparative example are identified as 41082/15 and the two images of the co-structured example of the invention are identified as 41085/02. No co-structuring of the sample of the comparative pigment mixture is observed. The SEM images show a clear distinction between the two types of pigment materials with the pigment co-structure of the invention having a superior brightness of 91.4 % in comparison to the brightness of the comparative mixture example at 89.8 %.

Experiment 4

This example shows the difference between a pigment blend and a co-structured pigment mixture with another pigment combination.

I. (Comparative Example) A pigment blend of 15 % by wt of TiO_2 and 85 % by wt of talc was prepared by the following procedure:

A 600 g amount of dry Finnish talc (size as described in Example 1, trial 2 of WO 99/52984) was added to a 5 litre volume fluidized bed mixer (type Lödige, Paderborn, Germany, plows rotating, stirrer in action). This addition was followed by the addition 12 g of active polyacrylic acid co-polymer (> 99.9 mole % acrylic acid and traces of 0.02 mole % vinyl phosphonic acid and 0.01 mole % of a methacrylate of polyaryl phenol + 40 EO (ethylene oxide). (The polyacrylic acid co-polymer was used as a dispersant for the talc component, and was added as a 35 % by wt active solution.) To this mixture was then added

3400 g of TiO₂ (DuPont RPS Vantage) as a slurry plus additional water to achieve a solids content of 68 % by wt.

II. (Invention) A pigment co-structure of 85 % by wt of TiO₂ and 15 % by wt of talc was prepared by the following procedure:

A 600 g amount of dry Finnish talc (size as described in Example 1, trial 2 of WO 99/52984) was added to a 5 litre volume fluidized bed mixer (type Lödige, Paderborn, Germany, plows rotating, stirrer in action). This addition was followed by the addition 12 g of active Nadavin KD, BAYER, which is a polyamid-amine resin that functions as a glue for co-structuring. The Nadavin KD agent was added as a 15 % by wt active aqueous solution. To this mixture was added 3400 g TiO₂ (DuPont RPS Vantage) as a 69.8 % by wt aqueous slurry and additional amount of water to achieve a mixture of 68 % by wt solids content.

SEM images of samples of the two materials were taken and are shown in the next page. The two images of the comparative example are identified as 68016/07 and the two images of the co-structured example of the invention are identified as 68016/05. No co-structuring of the sample of the comparative pigment mixture is observed.

6) The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

US States Patent 5 605 568 B1

Example 1 (66.7% CaCO₃ / 33.3% Talc)

Pigment mix of example 1 is taken from patent 5 605 568 B1 column 6 line 46ff.

Pigment mix: 46.7% CaCO₃
 23.3% Talc
 29.2% Water
 0.4% Grinding aid
 0.4% Dispersant

Co-structure

Pigment mix: 66.7% CaCO₃
 33.3% Talc

Samples

Example 1: 41082 / 16
Co-structure: 41082 / 17

Results

SEM-images on page 2 of example 1 (left column) do not show any co-structure.

SEM-images of inventive sample (page 2, right column) do even show less platlets due to total coverage.

Brightness R457

Example 1: 90.6%
Co-structure: 92.7%

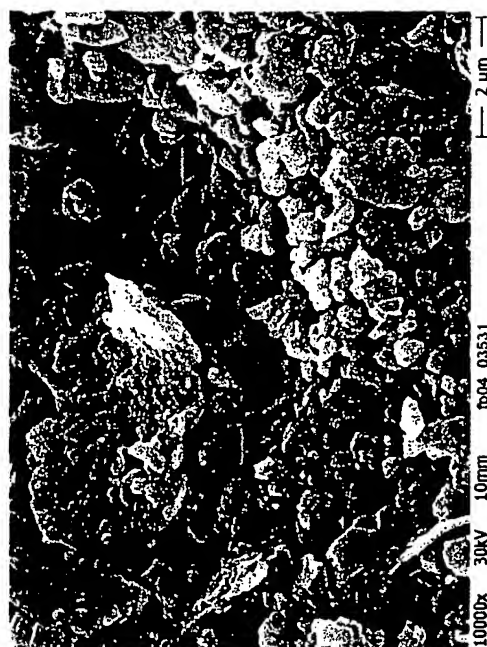
Example 1

41082 / 16



Co-structure

41082 / 17



Example 2 (75% CaCO₃ / 25% Talc)

Further example with different pigment ratio

Pigment mix: 52.5% CaCO₃
 17.5% Talc
 29.2% Water
 0.4% Grinding aid
 0.4% Dispersant

Co-structure

Pigment mix: 75% CaCO₃
 25% Talc

Samples

Example 2: 41082 / 14
Co-structure: 41083 / 06

Results

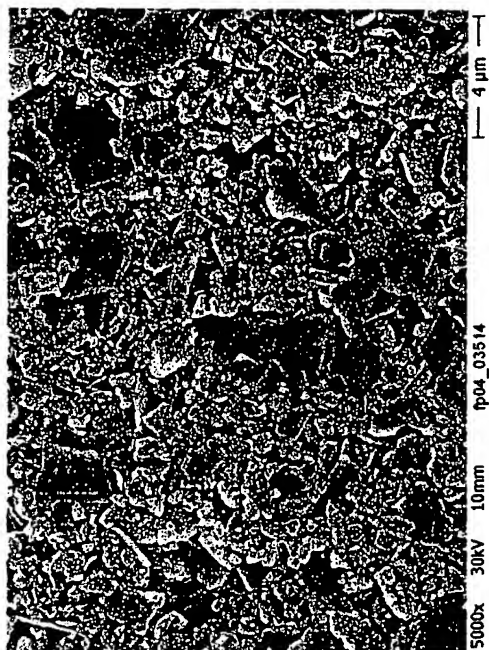
SEM-images on page 4 of example 2 (left column) do not show any co-structure.

Brightness R457

Example 2: 91.6%
Co-structure: 91.9%

Example 2

41082 / 14



Co-structure

41083 / 06



US States Patent 5 439 558 B1**Example**

Pigment mix of example 1 is taken from patent 5 439 558 B1 column 5 line 36ff.

Pigment mix:	55% CaCO ₃
	40% Talc
	5% Starch
	<hr/> 5% Binder

Co-structure

Pigment mix:	60% CaCO ₃
	40% Talc

Samples

Example 1:	41082 / 15
Co-structure:	41085 / 02

Results

SEM-images on page 2 of example 1 (left column) do not show any co-structure.

Brightness R457

Example 1:	89.8%
Co-structure:	91.4%

Example 1

41082 / 15



Co-structure

41085 / 02



Comparison Blend – Co-structure

This example shows the difference between blend and co-structure with another pigment mix.

Example 1

Pigment mix: 85% TiO₂
15% Talc

Samples

Example 1: 68016 / 07
Co-structure: 68016 / 05

Results

SEM-images on page 2 of example 1 (left column) do not show any co-structure.

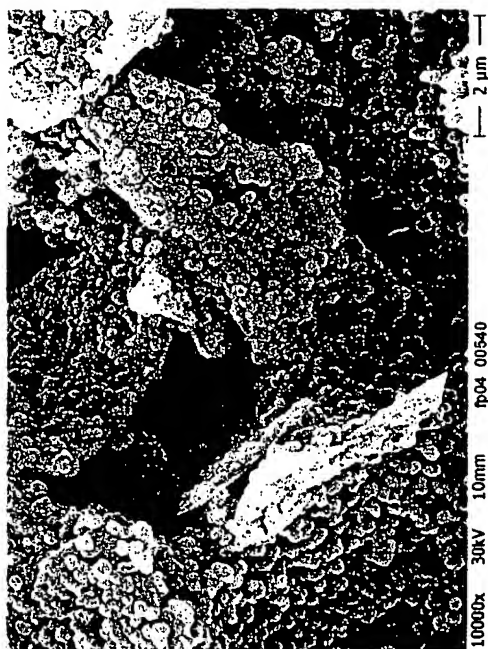
Example 1

68016 / 07



Co-structure

68016 / 05



7) Further, deponent saith not.

June 28, 2004

Date

M. Buri

Matthias Buri

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